A Naval Safety Center Publication

approach

DECEMBER 1974 THE NAVAL AVIATION SAFETY REVIEW

PLAN FOR WINTER

Planning Flight Operations. One of the first requirements for successful winter flight operations is *to know your aircraft as thoroughly as possible.* Review the operation of all aircraft systems which are required by, or might be adversely affected by, cold weather – well in advance of intended flights. Dig deep into NATOPS (and the Maintenance Instruction Manual, if necessary) to get a complete understanding of these systems.

Start your cross-country flight planning early by requesting an extended weather forecast from meteorology several days before your departure. Be aware that wind patterns shift with the seasons. The jetstream, in particular, shifts to the south during winter months, increases in velocity, and drops to lower altitudes. This usually means shorter legs between fuel stops, westbound. And remember in your planning to take into consideration that dozens of USAF weather detachments no longer operate around the clock. (See "RBS – Regional Briefing Service," JUN '73 APPROACH.)

Dress as if you planned to walk back. A summer flight suit may be very comfortable in a heated cockpit, but entirely inadequate if you find yourself in a survival situation.

Spend some time studying destination and enroute airfields in detail. Approaches may have to be made in conditions of poor visibility. Snow on the ground may blot out or distort the appearance of many landmarks. While looking over the airfield layout, pay particular attention to the location and type of emergency field arresting gear. Also, carefully note any obstructions which may present a hazard to flight or ground operations.

Before filing your flight plan, give it a last minute, but very careful, review – this time with the benefit of up-to-the-hour weather information.

Give the NOTAM file a careful check. It may be that one or more runways at your destination have been closed because of snow or ice (many airfields attempt to keep only the main instrument runway open during heavy snowfalls). Keep in mind also that as valuable as NOTAMS are, they will not always provide advance warning of field closings.

If the existing wind and weather at your takeoff point or destination is marginal, reconsider whether the flight should be made at all. If you happen to have an aircraft with critical crosswind characteristics, it may be that takeoff is not warranted.

Continued

Conduct a thorough preflight before takeoff to ensure that your aircraft is ready in all respects. Ensure that all surfaces of the aircraft are free of frost, ice, and snow. Any of these deposits will change the aerodynamic shape and/or characteristics of the airfoils, raising the stall speed and increasing the takeoff roll. The best and safest course is to ensure *complete removal* of *all* deposits prior to takeoff.

Ensure that pitot tubes, static ports, and fuel tank vents are free of ice and snow. Before starting engines, ensure that they are not frozen or hydraulically locked. Consider preheating engines before start, particularly in the case of propeller aircraft. Generally, if the outside air temperature is 20°F or lower, props, recip engines, and oil systems should definitely be preheated.

Start engines (recips and jets) with external power whenever possible. After start, check for proper oil pressure and generator/battery output.

Use Care During Taxi. Due to obliteration of markings on the ground, other aircraft may not be parked correctly. While taxiing, taxi slowly and lead into turns. Brakes may be almost totally ineffective on icy surfaces. If yours is a multiengine aircraft, use differential power for turning – but carefully.

Takeoff. Directional control can be a problem during takeoff. Braking for control until rudders become effective can be particularly hazardous. A wheel that is locked and skidding on ice, suddenly crossing a dry spot of runway, can cause a blown tire, or worse, a violent swerve. If there is snow, slush, or water on the runway, expect a longer takeoff roll.

After takeoff, if conditions permit, make a slight delay in retracting the gear. This will permit the wind to blow excess water and slush off the landing gear. Likewise, cycling the gear after retraction will minimize the possibility of landing gear or landing gear doors freezing in the retracted position.

If you must climb through altitudes where icing conditions exist, do so as rapidly as possible to minimize ice accumulation. Plan your cruising altitude to stay clear of icing. If you encounter icing, request a change of altitude as soon as possible, regardless of type aircraft.

Turbojet Engine Icing. Turbojet engine icing can become a problem. Ice can form over inlet guidevanes causing a restriction in airflow, resulting in reduced thrust, increased tailpipe temperatures, excessive turbine temperatures, and possible turbine failure. For a given engine, the rate of ice accumulation is approximately proportional to the *intensity of the atmospheric icing condition* and *airflow through the engine; the airflow being generally proportional to engine RPM.* The *rate* of engine icing, therefore, may be reduced by lowering *engine RPM.*

Lengthy studies pertaining to icing characteristics of clouds show that in stratus (layer type) cloud formations, the icing region can extend for many miles

horizontally. For cumulus type cloud formations, the depth of icing is considerably greater than the horizontal dimension. Therefore, whenever operational conditions permit, the general rule should be to change altitude (climb or descend) when encountering layer cloud icing and vary course, as appropriate, to avoid cumulus cloud icing.

*** Carburetor Icing.** This is a most treacherous ice accumulation type which frequently causes reciprocating engines to fail without warning. It may form under conditions in which structural ice could not possibly form. If the relative humidity of the outside air being drawn into the carburetor is high, ice can form inside the carburetor in cloudless skies and with the temperature as high as 25°C (77°F). It is most serious when the temperature and the dewpoint approach 20°C (68°F), but pilots should be alert for it any time the relative humidity is high. Ice sometimes forms with outside air temperatures as low as -10°C (14°F).

The carburetor heater is an anti-icing device which preheats the air before it reaches the carburetor, melting any ice or snow entering the intake and keeping the mixture above the freezing point. The heater is usually adequate to prevent icing, but it *will not always* clear ice which has already formed. During long glides with closed throttle, the carburetor heater may not prevent icing unless the throttle is opened periodically to keep the engine warm.

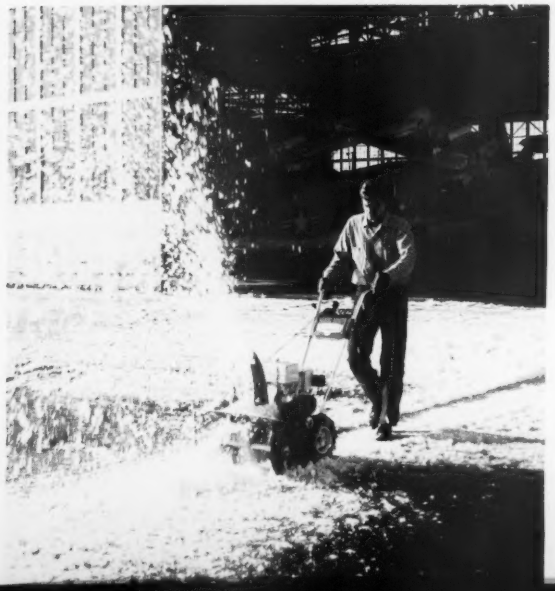
The Approach. Approaching your destination, don't be too eager to ask for or accept an enroute descent unless you are sure that it will not result in excessive fuel consumption or prolonged flight in icing conditions. Recognize that a low approach in icing conditions in tactical jet aircraft constitutes an *emergency approach* and should not be attempted if other alternate courses of action are available. Before commencing descent, ensure that defrosters are turned on in time to prevent canopy frosting during the penetration/approach. Monitor engine instruments carefully during descent. If the aircraft has accumulated structural ice, make allowances and maintain adequate flying speed. Turn off the deicer boots before the final portion of the approach, since they deform the leading edges of the wing and cause an increase in stall speed.

Be prepared to locate the runway when you break out, bearing in mind that snow may mask or distort its appearance. Instead of that 150 or 300-foot wide runway you are looking for, you may see what appears to be little more than a horse and buggy trail across a white field.

Landing and Rollout. Plan your touchdown point and landing speed carefully. After touchdown, there are three *normal* methods of stopping the aircraft: aerodynamic drag, wheel braking, and reverse thrust.

One of the problems most likely to be encountered in getting stopped during winter conditions is hydroplaning. To briefly review the subject of hydroplaning, there are two types: dynamic and

* FAA/Dept of Commerce publication, *Aviation Weather*



viscous. *Dynamic* hydroplaning (where the water lifts the tire completely off the runway surface) results in an almost complete loss of contact between the wheel and runway surface and virtually complete loss of braking effectiveness. *Viscous* hydroplaning, on the other hand, occurs at a much lower groundspeed than dynamic hydroplaning and requires only a thin film of fluid to be present on a smooth surface.

The effects of dynamic hydroplaning (the most commonly encountered of the two types) can be partially overcome by making maximum use of aerodynamic drag for braking. These drag effects are greatest during the first part of the landing roll (when the effects of dynamic hydroplaning are worse) since drag varies directly as the square of the aircraft velocity. Therefore, maximum use of aerodynamic braking should be made as soon as possible after touchdown. The aircraft should be rotated to the highest permissible angle-of-attack, maximizing induced drag (if authorized by NATOPS). In addition, all available drag devices (drag chutes, speed brakes, spoilers, and flaps) should be used unless prohibited by NATOPS.

Wheel braking should not be commenced until the maximum benefit has been obtained from aerodynamic drag. When wheel braking is attempted, its effect will depend upon the coefficient of friction between the runway surface and the tires and the proportion of the aircraft's weight on the braking wheels. A dry, clean, concrete runway will provide the best coefficient of friction; but water, ice, etc., will reduce braking efficiency drastically, perhaps by 75 percent – or more.

When you have the aircraft under control and have turned off the runway, use extreme care in taxiing so as to remain on the taxiway and clear of obstructions. This is where your knowledge of airfield layout (prior study?) will be especially valuable. Beware of snowbanks.

Give Winter Some Thought. Remember, with adequate preparation, many of the problems associated with winter weather can be minimized or eliminated entirely. The emphasis is on *planning.*

Sunshine is delicious, rain is refreshing, wind braces up, snow is exhilarating; there is no such thing as bad weather, only different kinds of good weather.

John Ruskin

The Storytellers

By CDR James W. Harris, USN

"JUST one little barrel-roll around the Elder Gull, just for fun, and I'm Outcast! I don't care what they think. I'll show them what flying is!" This attitude might be all right for Jonathan Livingston Seagull, but it's not the best one for naval aviators. Jonathan, in seeking a higher purpose in life, eventually went on to lead his "gull friends" to bigger and better things.

The history of aviation is written by many Jonathans who have led others, not to the good things of life, but rather to disaster. The disaster was simply the result of deviating from standard (safe) operating procedures.

Most of us realize that the human mind is capable of conjuring up an unlimited number of deviations. One thing pilots don't need is help in finding new ways of doing things that are not "by the book."

Unfortunately, military aviation is such that many pilots are influenced by their peers and consequently will try something they were not trained to do, not qualified to do, or not authorized to do. Many of these ideas originate in the casual conversations of readyrooms, officer's clubs, or squadron parties. We call them sea stories. Exaggerations and/or embellishments may be added to make the story more exciting.

For example, a student pilot (undergoing transition training in helicopters) heard at the club one night how his buddy's instructor made a backward-moving takeoff from a confined landing site. This student pilot just had to try it – on his first solo flight. He experienced severe vibrations in the turnaround and almost lost it. The Gull of Fortune smiled upon him this once, and no one was killed.

At a training command base, a few instructors were known to demonstrate double Immelmans to their students. What was the command's policy . . . were the students impressed . . . did they tell their buddies . . . and did any one of them go out and try these maneuvers in a more demanding and less forgiving aircraft?

Who are these storytellers? They often include the most-qualified pilots in the squadron. Jonathan had been doing rolls around his friends for years. It was easy. One day, a less qualified pilot decided to try what Jonathan had shown him. "Fletch" had no trouble the first few times with the roll because he gave himself plenty of airspace. Since Jonathan did it canopy to canopy, "Fletch" decided to get closer and closer until one day . . . scratch two airplanes. It's well to remember that the most proficient all too often lead the less qualified to disaster.

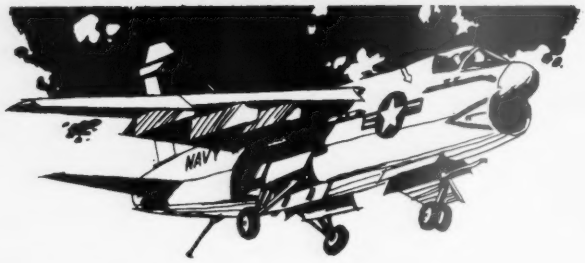
The most proficient pilots are at times a threat to themselves and the squadron's airplanes. These are the guys who have the best scores and consistently snag No. 3 at night. I wonder why so many of them are the subject of accident reports? Is it because someone failed to warn or stop them before it was too late?

One pilot decided he could do a square loop in a T-28. He pulled the wings off in flight because he exceeded the aircraft's structural limitations. Another pilot frequently demonstrated aileron and barrel-rolls in the S-2. His tail section failed in flight.

Once in a while, the flight leader will cut corners, take unnecessary risks, or even deviate from squadron instructions. This is particularly bad if the guilty party is the CO, the exec, or a senior officer. What kind of influence does this have on the wingman? Is it true that all flight leaders adequately plan their flight? I doubt it. No wonder some pilots run out of gas or have cross-country related accidents. The senior aviator's duty is to sort out the youngsters in the squadron and monitor their performance with utmost precision. He must also set an example for his wingmen.

Part of maturity and leadership is resisting the urge to "show off" or "blow off" around less experienced aviators. Demonstrating to the less qualified pilot that a truly "Sierra Hotel" pilot never exceeds the limitations of good judgment will lead to a psychological climate where excellence in mission performance is accompanied by an admirable safety record. Then, the juniors will survive to become, someday, good examples as mature leaders themselves. ◄

AIR BREAKS



Scrape-and-Go. One bright, sunny day, the crew of a single-rotor helicopter was making its second passenger/cargo transfer from ship to shore. The HAC was at the controls in the left seat and reported field boundary as requested by the tower. He was cleared to land on a taxiway. Winds were light and variable, less than 5 knots.

The HAC elected to make a run-on landing, and as the nose passed through the normal landing attitude, he realized the landing gear wasn't down. He increased collective and pulled back on the cyclic, but too late to avoid ground contact. He had already commenced the waveoff when the tower advised him to do the same. The copilot "woke up" long enough to lower the gear.

Damage was slight. They busted the forward rotating anticollision light and put some pretty good dents and scrapes on the ARA-25 antenna fairing.

It's rather obvious they either didn't perform the landing checklist, or started and never completed it. Kinda makes you wonder why.

Let's look at some of the details which preceded the scrape-and-go. The previous day, the same crew, in the same helo, had been busy all day flying the same kind of missions. They had made 16 landings – six aboard ship and 10 ashore. On the day of the incident, they had already logged three shipboard and two shore landings.

The air station was a busy one. For example, in this incident, the HAC maneuvered to avoid the approach end of the duty. 'Twas a good thing, too, since there was a section of A-4s on final. They also had to avoid crossing over three A-7s taxiing out to the duty.

In the normal, day-to-day flying routine in the airport traffic area of any major naval air station, helicopter pilots are used to all kinds of oddball tower instructions and advisories. You're told to cross the railroad tracks northbound at 300 feet or below, watch this or that, report the boundary, air taxi to the intersection of Runways 5 and 1, don't cross the duty, watch for taxiing traffic, etc.

There's nothing confusing about all this. After all, you're flying a pretty versatile machine, but you have to make it do what you want it to. Helicopters are dumb; they don't do anything on their own. If you're dumb, too, then a situation exists called a dumb-dumb, and that's not good!

It's highly probable that the HAC and his "helper" (he sure wasn't a copilot) were victims of preoccupation and complacency. This led to a broken habit pattern. The tower controller didn't help any by not asking for a gear check.

Several questions arise for which you readers may have an answer.

- Why wasn't the landing checklist completed before they crossed the field boundary?
- If the HAC didn't ask for the checklist at the boundary, why didn't his helper automatically run through it?
- On a clear and forever day, with no emergency, how could two naval aviators get so engrossed that neither remembered the gear?

This particular incident was no big deal, but logical answers to the above questions could lead to a reduction of gear-up landings.

I'll Be Dipped... Following takeoff on a training flight, the pilot of a P-3 called, "Gear up." The handle was smartly brought up, but the gear failed to retract. The

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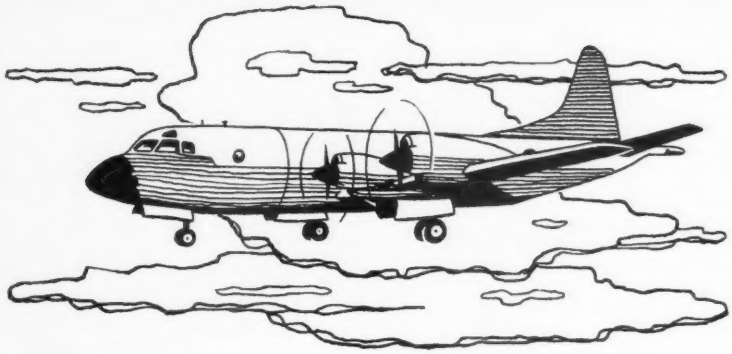


pins were still installed. The aircraft "bored holes" until fuel was burned down to landing weight. After landing, gear pins were removed, and the flight continued without further complications.

The endorsement laid it on. "This incident is a very good example of failure to communicate, combined with a sloppy preflight. The flight engineer didn't insert the gear pins after landing at an intermediate fuel stop because of the short on-deck duration and because power wouldn't be secured in the aircraft. The second mech, a stranger in this crew, inserted the gear pins, but failed to tell anyone. The copilot, on his walkaround preflight, saw the pins installed, but became distracted and didn't inform the flight engineer and eventually forgot about it. Finally, the PPC, the copilot, and flight engineer failed to ensure that a proper preflight had been performed, and the crew failed to coordinate their activities and communicate with each other.

"In essence, it was a chain of events so frequently seen in accident/incident reports. The fact that poor crew conduct resulted in only a minor incident reflects the hand of providence as opposed to any degree of professionalism. The crew has been extensively debriefed, counseled, and retrained as determined by the investigation."

Too Many Cooks Spoil the Broth. A T-29B departed NAS Gulf Coast on a pilot refresher flight. While on the downwind leg of the touch-and-go pattern, the IUT (instructor under training) in the left seat requested a practice single-engine landing with a simulated engine failure at the 180-degree position. When abeam, the instructor pilot retarded the No. 2 throttle to simulate a power loss and called "Power loss, No. 2."

The IUT commenced the memory items of the engine shutdown checklist and called "Feather No. 2." At this time, the plane captain under instruction depressed the No. 2 feather button, and the engine feathered as the aircraft passed through the 135-degree position. An uneventful single-engine landing followed.

"Everything you have to remember is right here on the good ol' checklist."

The plane captain under instruction reacted improperly by feathering the engine. The correct procedure for simulating feathering an engine is for the instructor pilot to set zero thrust on the engine. In addition, under actual emergency conditions, procedures for engine fire/failure designates the copilot to feather the propeller on the engine shutdown checklist.

The squadron CO in his endorsement stated:

"Squadron SOP specifically prohibits a plane captain from moving any controls or switches in the aircraft unless directly ordered to do so by the pilot in command. It is reemphasized that a plane captain is forbidden to feather an engine under any circumstance. The plane captain trainee, in the plane captain's seat at the time of the incident, was an experienced flight crewman with approximately 1100 hours in jet aircraft, but was on his first IUT flight in the T-29. The trainee's performance had been satisfactory as observed by the inflight plane captain instructor prior to the incident. The plane captain instructor had assumed an approved ditching station aft for the landing, in accordance with standard squadron operating procedures, just prior to this incident.

"Strict adherence to established squadron procedures and aircraft checklists by all flight personnel is mandatory and will continue to be reinforced in squadron training.

"Two trainees, the IUT and the plane captain, occupying two-thirds of the flightcrew positions appear excessive." ◄

UNAUTHORIZE

ONE of the latest in a series of tragic human and material losses occurred recently when an OV-10A pilot flew his aircraft into a set of 72,000-volt powerlines 100 feet above the ground. The impact broke three lines. Witnesses observed electrical arcing at both wingtips and reported small pieces of debris falling after the collision. The aircraft continued in wings-level, descending flight and impacted the water in a nose-low attitude approximately 300 yards from the powerlines.

The aircraft exploded on impact, and one nearby witness reported three nearly simultaneous explosions. This is believed to have been the firing of the ejection seats, combined with the aircraft impact. The pilot (the only person aboard) was fatally injured.

Perspective. Compared with other causes, unauthorized airshows (low-level flight or unauthorized acrobatic flight) account for only a small portion of accidents. The tragedy, of course, is that such accidents are completely avoidable. All that is necessary to prevent such accidents is a modicum of restraint and common sense. Unfortunately, a few aviators seem unable to meet this minimum standard. Here, for example, are some unauthorized airshow accidents and incidents which have occurred during the last few years.

Visit to Uncle's Farm. Prior to takeoff on a cross-country flight, the pilot of an OV-10A advised his wife that he was going to fly over his uncle's farm. The first leg, an IFR flight plan, was uneventful. After landing and refueling, he took off on a VFR flight plan. About an hour after takeoff, five witnesses saw the aircraft flying low over the area, performing aileron rolls and circling near his uncle's property, located one-half mile east of where the aircraft eventually crashed.

Just prior to the crash, the OV-10 was flying in a westerly direction at low altitude. Shortly after passing his uncle's house, the aircraft contacted some 50-foot high trees. It continued westward in a slight right, descending curve, contacting trees and finally crashing inverted in a gully. The aircraft was destroyed, and the pilot fatally injured.

Wife Observes Crash. There is evidence that a T-2C student pilot planned to perform an unauthorized airshow for his wife after takeoff on a solo flight. Approximately 30 minutes after takeoff, the aircraft crashed within 2 miles of the pilot's local residence. His wife was among the ground observers reporting the crash. The aircraft was generally described by witnesses as flying low, fast, and rolling just before ground

D AIRSHOWS

collision. Just prior to impact, the pilot attempted ejection from a nearly inverted position at an extremely low altitude. He sustained fatal injuries.

Close Call. An F-4J pilot and RIO descended over a body of water to an altitude of 75 feet, as indicated by the radar altimeter. Airspeed was 325-350 KCAS. At this time, the RIO's head was in the cockpit looking for his area charts to compute a heading for destination. He was not aware of the aircraft's altitude. The pilot later described the sea state as being "glassy." He stated that he flew at this altitude for about one to two minutes, scanning the radar altimeter once while using his frontal and peripheral vision (with reference to the water and horizon) for an indication of altitude. During this time, the aircraft apparently hit the water. The crew felt and heard a thump. The pilot described it as hitting something, and the RIO described it as jetwash.

The pilot then started a climb, and the RIO noted the *Phantom* passing through a haze layer, later reported by the pilot to be at 100 feet. Climbing to 10,000 feet, the aircraft was slow-flighted, and an uneventful landing followed. Postflight inspection revealed that the centerline tank was missing with evidence that it had been torn away by impact.

Who Are the Culprits? To hear some of the COs tell it, after the fact, the individuals concerned are often "one of my best pilots . . . above the average," etc. Then follows a painful discussion about how out of character such behavior was for the pilot involved. On the other hand, most investigations turn up one or more individuals who were aware, before the fact, that the individual concerned was not always professional in his approach to flying. Careful investigation usually reveals that the individual had been guilty of air discipline infractions on a continuing basis. The sad part, however, is the fact that those who know fail to communicate the facts to the CO or others who can do something about it. Let's face it, a junior officer who observes an infraction of air discipline by a more senior officer is loath to report that fact to a CO. The reasons are obvious.

It is not solely the fact that one hesitates to criticize a superior. In the case of the T-2C pilot who crashed while

being observed by his wife, there was ample evidence of premeditation. The student communicated his intentions to a fellow student pilot before takeoff, yet this person took no steps to report it. He merely advised the pilot against doing it.

What Can Be Done? It's difficult to rat on fellow aviators, regardless of rank. Nevertheless, when a pilot or naval flight officer becomes aware of a dangerous, gross infraction of air discipline, he has a moral obligation to remonstrate with the person involved and/or bring it to the attention of competent authority. Secondly, COs must create an operating atmosphere in their commands where violations of air discipline are neither condoned, approved, nor tolerated. COs must know their men and, where necessary, provide responsible supervision and direction.

Finally, the ultimate answer to the problem is for each and every aviator to exercise self-discipline and strive for professional performance at all times. This will automatically eliminate the unauthorized airshows which have caused substantial losses to naval aviation in the past *(and continue to do so today – Ed.).* ◄

By the Numbers...or With the Head?

Adapted from an article by Irv Burrows
Chief Experimental Test Pilot
McDonnell Aircraft Co.

THE DAYS of flowing scarf and singing guy wires are gone, at least for the military pilot. "Seat of the pants" flying has essentially been replaced by a procedural approach – lots of checklists, step-by-step procedures, canned patterns, etc. Sure, this is a necessary trend; we fly big, fast, complex, expensive machines, and we need the handbook's help to minimize human error. But . . . I can't help wondering, occasionally, if we couldn't use a little more of the old system which, in the final analysis, was largely a process of filling in the spaces between the lines in the handbook with lots of headwork.

Let me make a blunt statement – I think our extensive reliance on the written word has decreased our ability to think – well, maybe not our ability, but certainly our tendency. Now, I don't mean that to be an earth-shaking or revolutionary statement; it is merely my analysis of a trend, perhaps subjective, but at least thought provoking. I dislike generalities because they can be falsely all-inclusive; and I am not, by any stretch of the imagination, accusing everyone of not thinking while flying. I *am* saying, however, that our present-day environment does more of the thinking for the pilot and, therefore, may allow him to get a little out of the habit!

I'll pose an example of what I mean – no intent to point to any actual case, but, in fact, it occurred . . .

Pilot X is driving an F-4 with external tanks aboard and, in the course of his flight, notices that one external wing tank is not feeding. "Aha," says he, "I'll keep an eye on that and keep it trimmed out – but no sweat, I know I can land with one full external."

And he was right – it should have been no sweat, and sure, he could have landed okay. Unfortunately, a short mental lapse followed – a snappy 4G break over the field was executed, at which time the heavy tank caused an asymmetric roll load equivalent to some 7000 pounds over trim conditions (3G times 2400 pounds). Scratch one F-4.

Without any of us getting into precise aerodynamic causes and effects, it's obvious that this kind of sudden and unexpected rolling moment experienced at 300 knots and 1500 feet over the ground can bring on disastrous results. On the other hand, with proper treatment, this configuration can be landed safely day in, day out. It is not an overwhelming task, but it does require using one's head for more than retaining the helmet in position.

I wouldn't even guess at the percentage of pilot-error accidents which could have been prevented if the pilot had been just a little more aware of and prepared for what faced him. In other words, the difference between just another incident and a lost airplane (and maybe crew) can so often be a simple lack of straight thinking. There will always be cases where material failure, weather, or other circumstances provide just too much of an obstacle for any pilot to overcome. Then, there will be others where the odds get better, and exceptional pilots may hack the course. But, the capers I'd like to eliminate are those where any pilot can cope with the problem *if* he is awake and mentally prepared.

There are lots of these situations that the checklists and the handbooks can't cover for us always. It's up to us to use the information presented on paper, absorb it, understand it, and then *think with the airplane.*

Anyone who goes out to fly an airplane for the first time – be it a brand new model or simply an initial checkout flight – is prepared for the unknown. He makes a continuous effort to stay with or ahead of the aircraft mentally. Maybe this is the approach to strive for – to try to "outsmart" the airplane. Guys who fly by the numbers *and with their heads* generally will.

Courtesy 3rd MAW *Safety Review*

The Flight Before Christmas

By LT Robert F. O'Connor (Ret.)
and Robert Trotter
with apologies to
Clement Moore

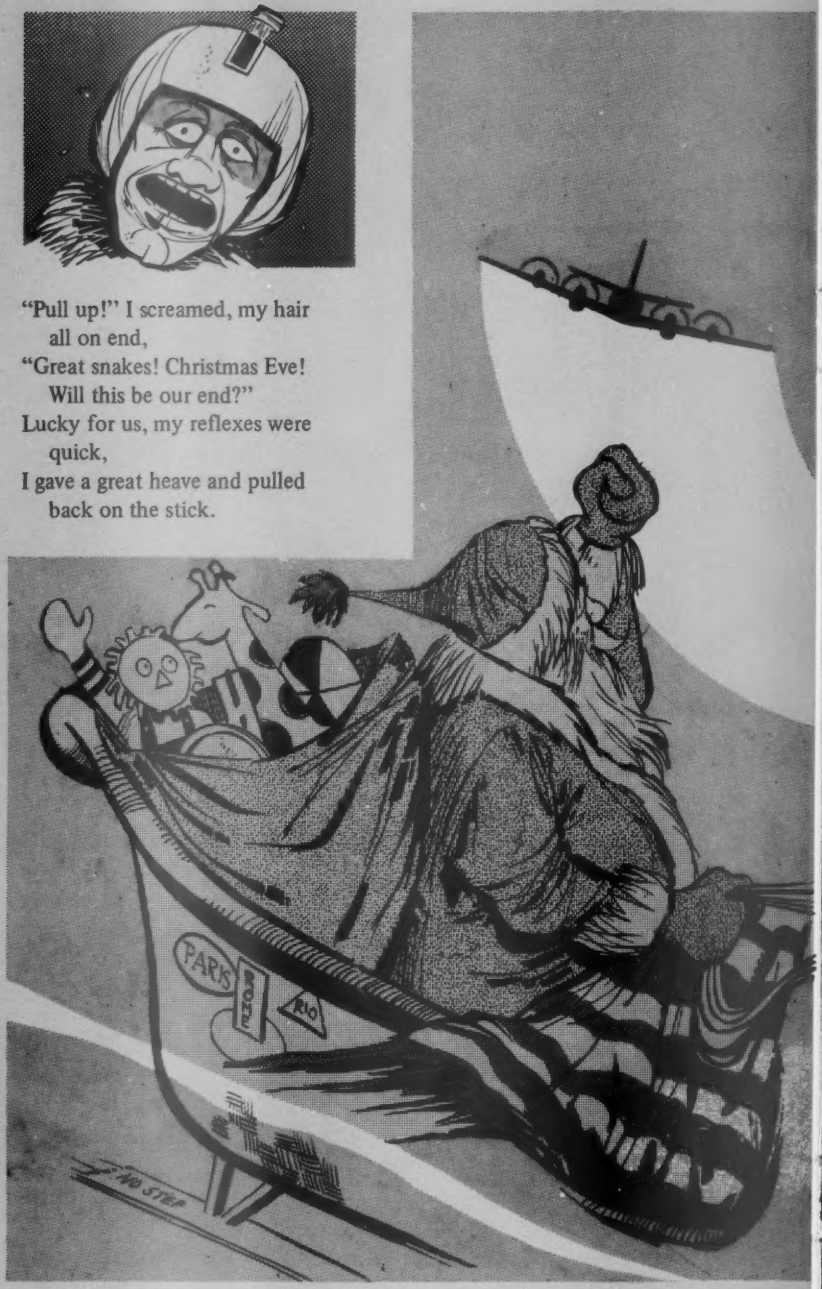
Now listen closely and you shall hear,
The strangest tale in many a year.
The story of how, on a Christmas long past,
My meeting with Santa was nearly my last.

Canto I

'Twas the flight before Christmas
And from all o'er the base,
The crew had assembled
For the flight to take place.
The pilot was busy preflighting
the craft,
Checking fuel load and compasses,
flight plans and raft.
He was weary and worn, but with
no thought of bed,
For visions of home danced
'round in his head.
Our baggage was stowed with the
usual care,
In hopes for a smooth ride through
unstable air.
And I in my hardhat with chinstrap
pulled tight,
Settled down in my comfortable
seat on the right.
The crew climbed aboard through
the new-fallen snow,
All carefree and happy and
anxious to go.
With checklists completed (we
knew them by heart),
I raised up a thumb -- we were
ready to start.
Then out on the wing there arose
such a clatter,
That I turned in my seat to
see what was the matter.
All engines were high time, but
for this hop they'd run,
We got clearance to taxi, the
flight had begun!

The moonlight, reflected by
new-fallen snow,
Gave the ice on the runway a cold,
eerie glow.
Now lurching, now skating, to the
duty we slid,
And conducted our runup in a
slight starboard skid.
We got clearance to take off, climb,
and report,
And I hoped as we rolled that we
wouldn't abort.
We swerved and we slithered,
then at once we could tell,
That we'd broken ground safely
and had wheels in the well.

"Pull up!" I screamed, my hair
all on end,
"Great snakes! Christmas Eve!
Will this be our end?"
Lucky for us, my reflexes were
quick,
I gave a great heave and pulled
back on the stick.



Canto II

IFR was the way that our flight
plan decreed,
And relieved after takeoff,
we put down our beads.
Then all settled down to the
tedium of flight,
Lookouts peering sharp t'ward the
depths of the night.
The sky was so dark, there was
barely a light,
From stars or moon to guide us
just right.
"Fear not," said our pilot, his
voice calm and dry,
"Always travel on gages – 'tis the
one way to fly."
Then suddenly what, to my eyes
should appear,
But a miniature sleigh and eight
tiny reindeer.
Closing fast from below – we had
to be quick,
For I knew we were about to
collide with St. Nick!

More rapid than eagles our courses
converged,
And as he whistled on by us, my
heart gave a surge.
With the reindeer in front and a
small sleigh behind,
It was too small a target for Center
to find.

We looked back with awe as he
sped through the night,
With no visible means to sustain
him in flight.
And I shuddered to think of the
Yuletides to come,
And the damage to all that might
have been done.

My friend, it was truly an incident
rare,
And in silence we churned on
through the night air.
Silent and pensive, no longer
carefree,
Each one straining his eyes
through the darkness to see.
Overcome by the thought of whom
we had met,
We finished the flight, our palms
damp with sweat.
The landing was smooth, executed
with skill,
We rolled to the line and shut
down the mill.

Canto III

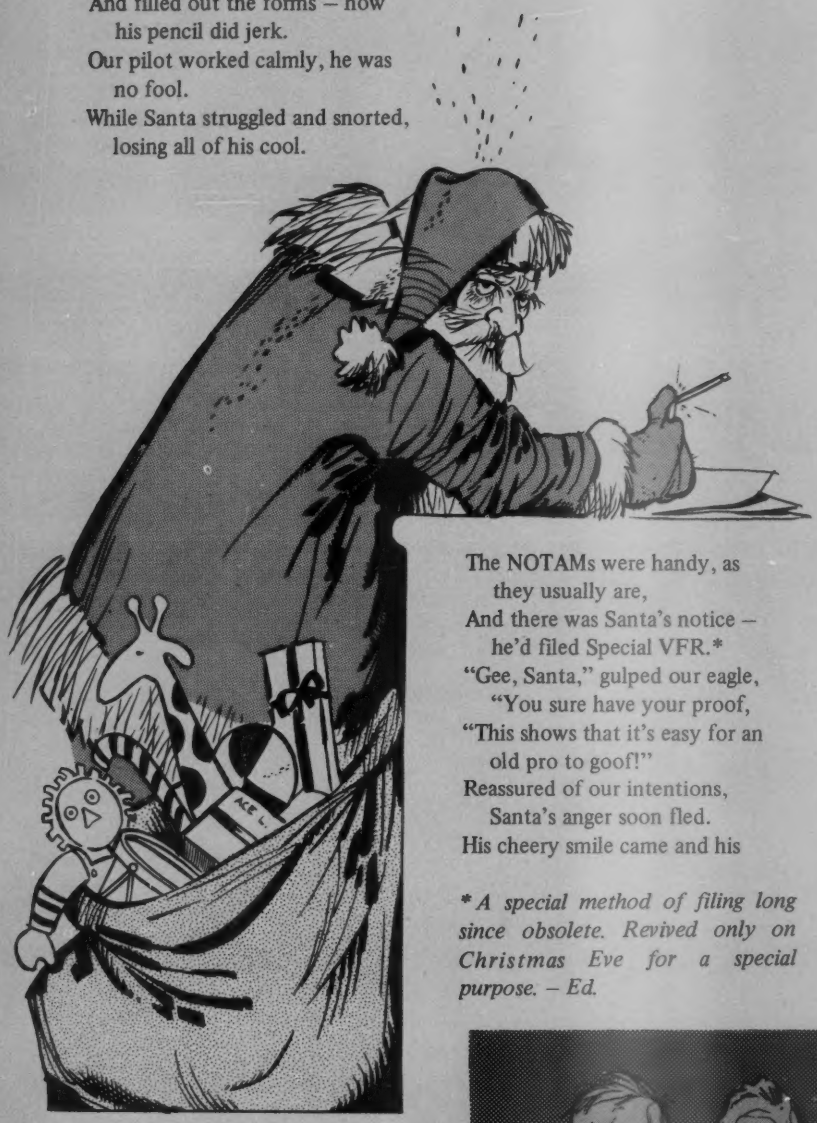
Then we trudged through the
snow to report to Base Ops,
Glad to be done with the most
hectic of hops.
"A near-miss!" the OD surprisedly
cried,
"You'd better believe it," our
pilot replied.
Then the questioning started, and
'midst all the fuss,
A great ruckus commenced on
the roof above us.
There's no dancing allowed on the
roof at Base Ops,
But something was there and it
pulled out all stops.

The noise shook Ops from
ceiling to floor.
And without wasting time I jerked
open the door.
We were startled, dumbfounded,
completely surprised,
For there stood St. Nick, right
in front of our eyes!
He was overage for a stick, and
too fat to boot,
With a crazy fur collar on a red
poopy suit.
His beard was the wildest, his
hardhat insane,
His hair snowy white,
a tousled old mane.

Nodding t'ward the roof, he spoke
rather warily;
"Have to park my team, but just
temporarily."
Then he entered and said with
his voice in a hiss,
"Where the hell do I go to report
a near-miss?"
"Check with the OD,
he'll give you a form."
The old boy roared "Thanks,"
his voice like a storm.
He strode to the desk, slammed
his fist without pause,
And cried, "Service, young fellow,
don't snit Santa Claus!"

Canto IV

Then he spoke not a word, but
went straight to his work,
And filled out the forms – how
his pencil did jerk.
Our pilot worked calmly, he was
no fool.
While Santa struggled and snorted,
losing all of his cool.



Our pilot, an eagle, then lifted
his face,
And said, "It was your fault;
you were in my airspace."
Santa's face got all red and he
threw up his hands,
"My fault," he roared, "You didn't
check NOTAMS!"

The NOTAMs were handy, as
they usually are,
And there was Santa's notice –
he'd filed Special VFR.*
"Gee, Santa," gulped our eagle,
"You sure have your proof,
"This shows that it's easy for an
old pro to goof!"
Reassured of our intentions,
Santa's anger soon fled.
His cheery smile came and his
good humor spread.
"Full well this shows
how man goes amiss,
"But in aviation, you know,
mistakes don't make bliss.
"But now I'm late, so all take
heed,
"And learn all the things you'll ever
need.
"Don't be complacent, never
assume,
"And on Christmas Eve, give me
plenty of room."
With a smile and a nod he went
out in the snow,
And we followed, all hating to see
Santa go.
Then laying his finger alongside
his nose,
To the roof of Base Ops he
smoothly arose.
He called to his team, and with
a wink on his face,
Off they all flew, straight out into
space.
And we all heard him say
as he drove out of sight,
"Happy Christmas to all,
and to all a safe flight!"

** A special method of filing long since obsolete. Revived only on Christmas Eve for a special purpose. – Ed.*

Bravo Zulu

LT H. W. Linne (HAC), left
LTJG S. L. Madey (C/P), right
HS-3

THE WEATHER that night was hazy with a low layer of scattered clouds. A full moon beamed through the clouds and provided a faint horizon. The surface was visible from a 40-foot hover. The sea was choppy with a wind of 18 knots.

LT Herbert W. Linne, his copilot, LTJG S. L. Madey, and their crewmen had launched from FORRESTAL in their SH-3D on a night ASW mission. They were into a third dip when LT Linne noticed the torque on No. 2 engine drop toward zero. The helo began to settle. LTJG Madey responded immediately to the HAC's demand for full power.

As full power was applied, LT Linne lowered the collective slightly and leveled the aircraft. At about 5 feet above the water, he raised collective to cushion the landing, and they settled softly into the sea. LTJG Madey broadcast a Mayday, but even though they were only 20 miles from FORRESTAL, they received no reply.

The HAC ascertained that the crewmen were OK and that there was no damage to the *Sea King*. Checklists were begun to attempt a single-engine water takeoff. LTJG Madey guillotined the sonar cable, and LT Linne alerted one of the crewmen to stand by to dump fuel. His copilot used manual throttle on the No. 1 engine until topping was attained. The aircraft was unstable on the water, and LT Linne stayed on the gages to keep it level.

As soon as topping power was attained, LT Linne began to taxi and was able to lift off. Total time on the water was about one minute.

At a height of 20 feet and with the expected N_r droop, the helicopter began to settle. N_r stabilized, and airspeed began to increase, in ground effect, as the radar altimeter registered 5 feet. The HAC held what he had until they had attained 45 knots airspeed. He then raised the nose slightly to climb. Ever so slowly, they began to gain altitude. Upon reaching 50 feet, with 65 KIAS, LT Linne leveled off and increased his turns which had stabilized at 90 percent.

LTJG Madey was successful in broadcasting their emergency and received a reply. He reported their position and requested a clear deck for a single-engine, run-on landing. They continued an easy climb on their return until reaching 300 feet. Enroute, they experienced severe yaw kicks. These were eliminated when the copilot retarded No. 2 engine to ground idle.

FORRESTAL had been in the middle of a launch cycle, but by the time the helo reached the ship, every aircraft was clear of the angle, and LT Linne made an uneventful landing.

LT Linne and LTJG Madey displayed flawless teamwork in preventing an accident. Their good judgment and rapid response during the emergency prevented injury and damage.

Well Done.

Although there were no warnings of the impending disaster, the next few moments were to become a vivid example of the timeworn phrase ". . . hours of boredom punctuated with moments of stark terror."

Midair

By LT K. Reed
VF-11

IT WAS a beautiful Friday afternoon with clear weather and unlimited visibility. I was inbound from the warning area at 14,000, using the newly instituted positive control procedures. Only a few minutes stood between touchdown, a quick beer at the club, and home to the family for a weekend of leisure. My machine was responding perfectly, and with radar separation provided, this would be a piece of cake, right? Wrong!

I had just completed an IFF change and a quick instrument check when a flight of three A-7s first became visible at my 8:30 o'clock position, slightly low on a climbing course and very close aboard. Instinctively, I rolled hard starboard, but the sickening shudder immediately dashed all hope for avoiding a midair. My now crippled *Skyhawk* began rolling and tumbling uncontrollably, and the probability of ejection appeared imminent. Surprisingly, however, the aircraft stabilized itself, and my attention was then directed to countering the numerous warnings vividly displayed on my telelight panel.

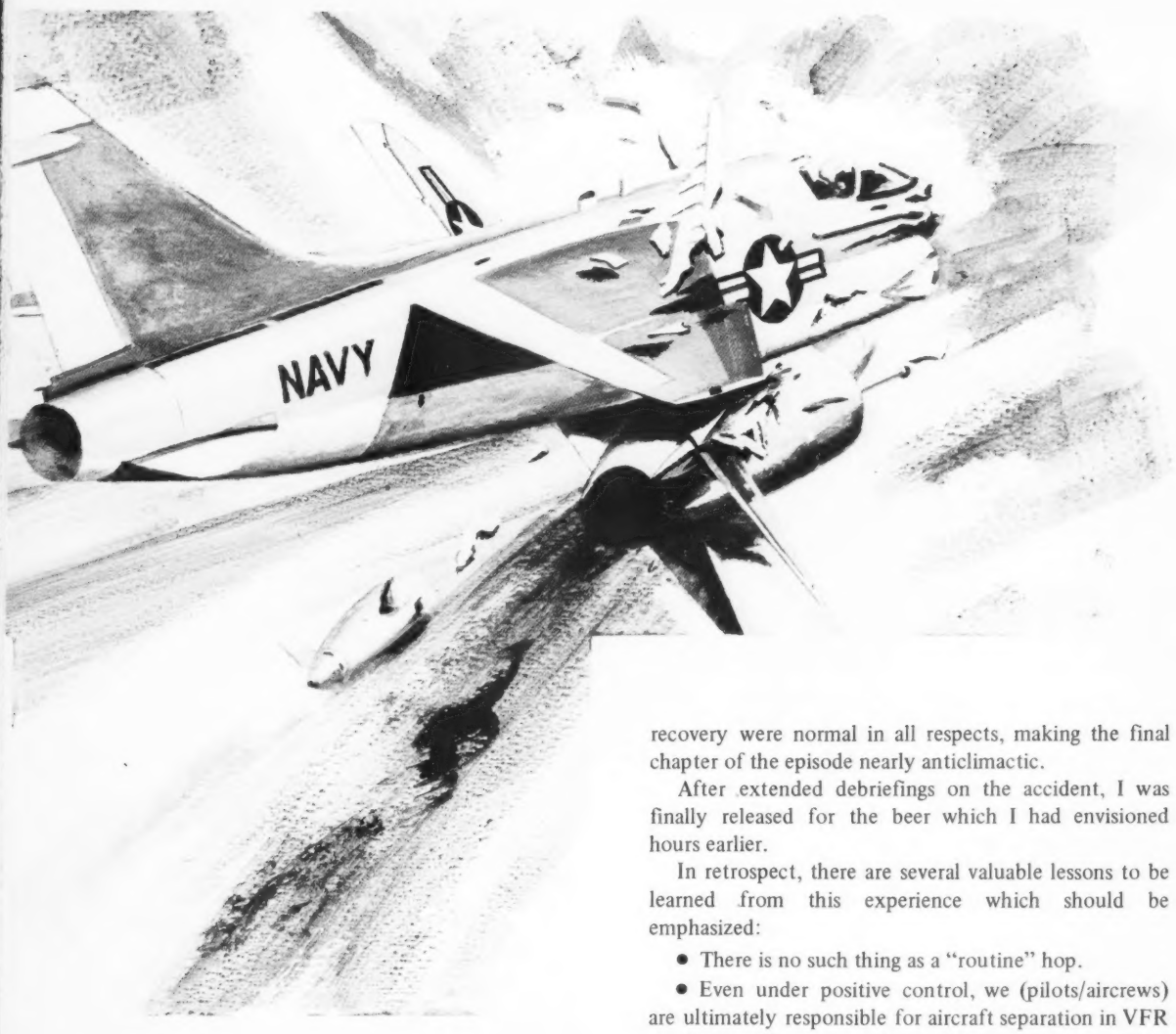
It was subsequently determined that I had been in a collision with the lead A-7. One of the other two *Corsairs* passed forward and below, while the other A-7 passed aft and below. Neither sustained any damage, but the lead aircraft went out of control and crashed. Apparently, the pilot was incapacitated on impact as there was no ejection attempt observed.

In the tense moments after the collision, I completed the emergency procedures for fire in flight and loss of all hydraulic systems. The possibility of saving my wounded bird began to dominate my thoughts. This "can do" attitude, coupled with a lack of external A-4 knowledge, subsequently placed me in a nearly unrecoverable position. (Normally available A-4 expertise was not forthcoming since local units were secured at the time of the collision.)

I switched to guard and transmitted a "Mayday," but was cut out by one of the downed *Corsair's* wingmen. After several unsuccessful attempts to broadcast, I switched to tower frequency and asked for a visual inspection. Another flight of A-7s in the area joined on me and reported the following damage: the entire port slab and elevator were missing, the rudder was half torn off and jammed hard over to the right, and a quarter to half of the port droptank was gone.

A controllability check showed that I could maintain wings level by cross-controlling with aileron, but I could only make gentle turns to the right. There was no response to elevator inputs, but by varying power settings, I could establish various nose attitudes, thus enabling shallow climbs and descents. Minimum controllable airspeed appeared to be 220 knots.

At this point, I requested advice as to the feasibility of making an approach under these conditions, but the A-7s and tower personnel were unfamiliar with the A-4. The requested assistance was not forthcoming, so the "can do" spirit prevailed. I decided to try a gear-up, no-flap arrested landing. I think I can categorically state



that it was the worst operational decision I have ever made since the necessary high approach speed exceeded arresting gear limitations and the lack of elevator effectiveness made glide slope extremely difficult, if not impossible, to control. Nevertheless, the approach went fairly well until I went high and pulled power for the necessary correction – the nose fell through more rapidly than anticipated. From there, it was 100 percent power and full backstick in what was then a desperate attempt to wave off.

The lowest point of the approach was approximately 4 feet – with the tailhook dragging on the runway. An eternity later, a steady climbout was established, and the LSO advised me to find a clear area and eject. Heart in mouth, I readily concurred. The subsequent ejection and recovery were normal in all respects, making the final chapter of the episode nearly anticlimactic.

After extended debriefings on the accident, I was finally released for the beer which I had envisioned hours earlier.

In retrospect, there are several valuable lessons to be learned from this experience which should be emphasized:

- There is no such thing as a "routine" hop.
- Even under positive control, we (pilots/aircrews) are ultimately responsible for aircraft separation in VFR conditions. We cannot rely on the guy on the ground to pick up all nonsquawking, VFR traffic. Although the A-7 approach path in this particular accident was virtually undetectable visually until close aboard, it is apparent that midairs of this nature do not occur without a breakdown in the lookout doctrine by at least one of the parties involved.
- The necessity for readily available ground assistance for emergencies of this nature cannot be overemphasized. The value of a base radio and instant advice is deemed extremely important by this writer, even for TAD detachments, which happened to be the case here.
- One must consider all the variables when making a decision in an emergency and must not allow the "can do" spirit to override sound, logical thinking. ◄

By John H. Harden, Jr.
Requirements Division
Defense Mapping Agency Aerospace Center
St. Louis AFS, Missouri

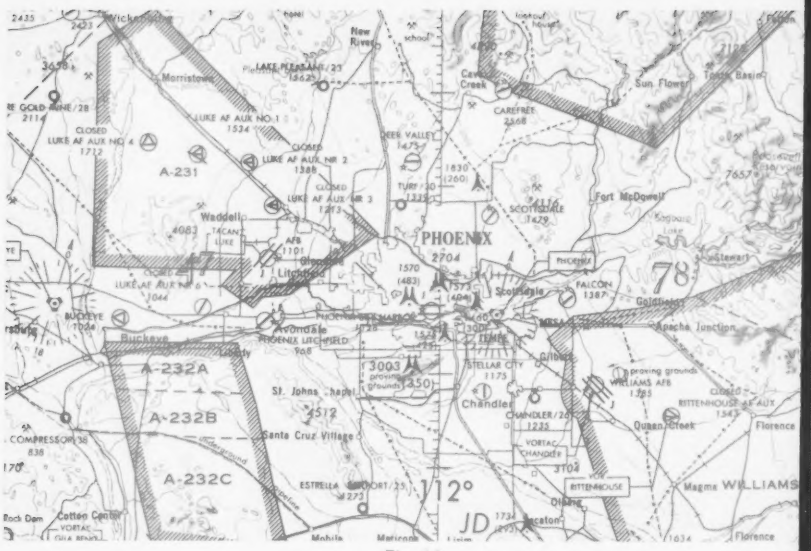


Fig. 1A

How to Get More Out of Your Chart

Fig. 1B

ALTHOUGH significant cartographic achievements in support of space and weapon systems have been made in recent years, such as the A-7 map display, computerized digital terrain data for the Air Force Undergraduate Navigator Training System, precise target locations, and specialized graphics for *Apollo* and *Skylab*, the aeronautical navigation chart has changed relatively little. Improved versions of sextants, computers, and other tools of the trade come and go, but the

aeronautical chart remains basically a chart. Small wonder then that the aeronautical chart has, over the years, been venerated as the navigator's panacea with misconceptions growing naturally as part of that process. Misconceptions can, unfortunately, lead to misuse, and misuse will sooner or later adversely affect the mission. At best, this means being "temporarily disoriented" (we never get lost, do we?); and at worst, it means more takeoffs than landings.

Bluntly speaking, your chart, properly used, can save your life. This article will hopefully provide information of a practical suggestive nature to help you use, for example, the TPC (tactical pilotage chart) and ONC (operational navigation chart) to greater advantage. If you want a fancy phrase, call it "preventive cartography."

What Is a Chart? First things first: What is an aeronautical chart, and more importantly, what *isn't* it? Let's dispel one myth right away. A lot of pilots (and navigators, too) firmly believe that an aeronautical chart is a faithful, miniature picture of the real world. This is simply not the case (compare Figs. 1A and 1B).

Every natural and cultural feature is not, and cannot, be shown on the chart, and everything on the chart does not have material existence in the real world. The rules for what is shown vary (more on that later). Charts are, in fact, *schematic* diagrams of *selected* features found over, under, and upon the real world.

Because charts are not true pictures of the real world, misrepresentation to some degree is expected. This, I hasten to add, is not due to cartographic incompetence, but is an inherent quality of all charts.

Scale. This inevitable misrepresentation is a result of, more than anything else, the problem of scale. A fundamental understanding of scale is necessary for the user to fully understand the characteristics and capabilities of charts.

Obviously, charts are much smaller than the area which they represent. Chart scale expresses this relationship in mathematical terms. The expression 1:500,000 means that for every "one" unit on the chart, there are 500,000 units on the earth. The units can be inches, miles, feet, meters, or bottle caps – the interpretation is the same: for every one on the chart – 500,000 on the earth. To the user, this means that the cartographer has crowded *more* earth units into *one* chart unit. And, the more crowded it gets, the less he can show. Being faced with such an excess of information, he must selectively show only that information that best serves the purpose of the chart. The smaller the scale, the more selective the information shown. Therefore, for reasons of smaller scale, the ONC is more selective than the TPC, as shown by Figs. 2A and 2B.

Continued

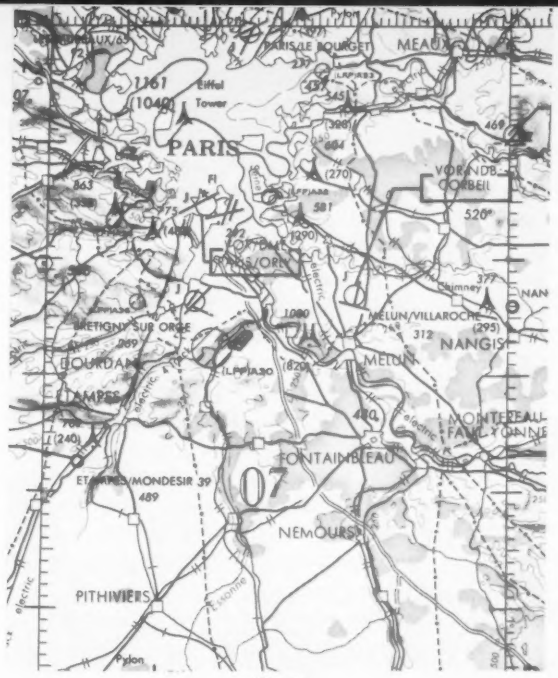


Fig. 2A

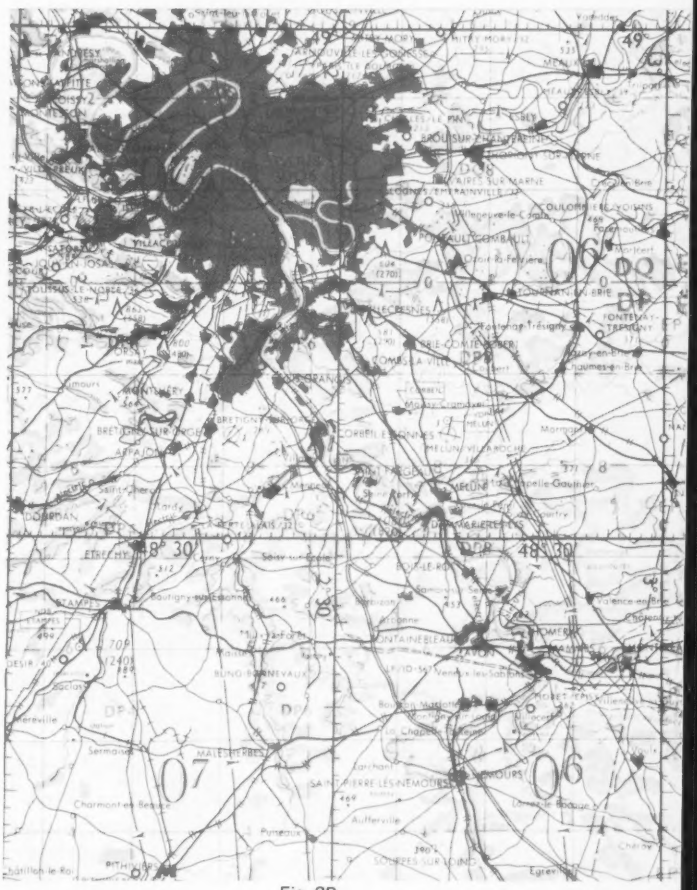


Fig. 2B

Clutter. As mentioned before, no attempt is made to show all features on aeronautical charts. Looking again at Figs. 1A and 1B, you will see much more information present in the real world than on the chart. The cartographic selection of a small part of the total real world undoubtedly causes a great deal of confusion in interpreting aeronautical charts. This problem is the cartographer's albatross, for he must exercise wise judgment in selecting which features will be shown, based on an intimate knowledge of what he knows the user needs. As a general guide, the cartographer tries to provide, without clutter, a maximum uniform density of ground features which are of navigation significance. Thus, in highly congested urban areas, which naturally contain more potential navigation features, much detail has to be omitted to reduce clutter and enhance the readability of what is left.

The cartographic requirement for uniform density also works in reverse, especially in sparse areas. To maintain an even density, the cartographer may add features which would not normally be portrayed.

Feature Enlargement and Generalization. Scale also keeps the cartographer from showing the feature at its true relative size. All but the largest natural features must be symbolically enlarged on the chart for legibility. Referring again to Figs. 1A and 1B, you can readily see that road widths, for example, are greatly magnified. The primary road symbol shown covers 2167 feet in the real world, an obvious exaggeration. Scale also forces the cartographer to generalize the shape of some features, particularly intricate ones such as lakeshores, coastlines, and twisting rivers.

Feature Displacement. All of the previously mentioned restrictions of scale, such as clutter, enlargement, and generalization, result in another problem that deserves consideration by the user – the unavoidable displacement of some features on the chart from their true position. A common example is the railroad-along-the-road situation, as shown in Fig. 3.

Often, the railroad is parallel and close to the road. But the cartographer hesitates to position the railroad in its true relative position because to do so would superimpose the railroad symbol over the road line symbol and create visual interference. This displacement is inseparable from the cartographic process and should be taken into account by the crewmember who uses charts for precise fixing.

Fly Current Charts. Now that the inner secrets of scale are perfectly clear, you are ready for flying, or are you? How do you know for sure if the chart you have in hand is current? A minor but crucial step in your preflight planning should be to consult the latest DOD Aeronautical Chart Bulletin Digest (issued semiannually

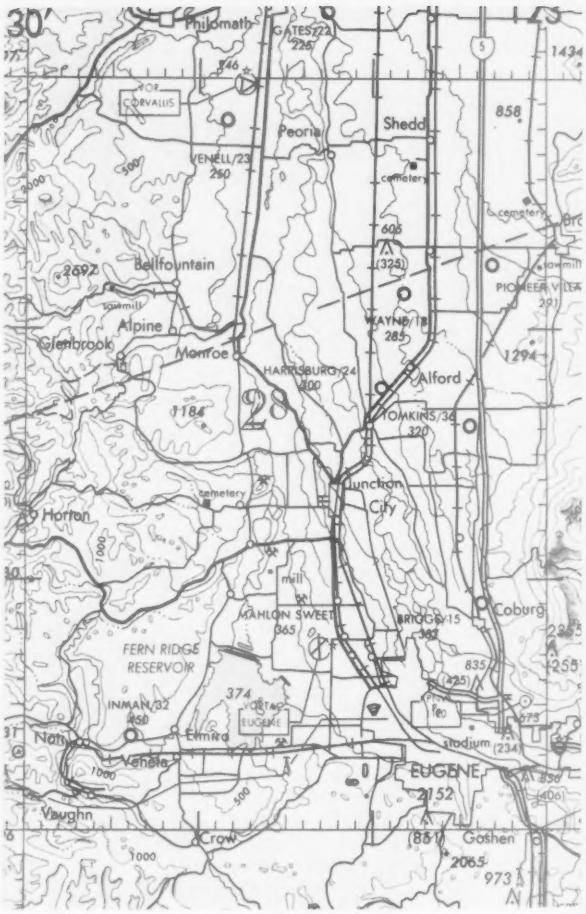


Fig. 3

in May and November) and any subsequent monthly DOD aeronautical Chart Bulletin. If either of these publications lists a higher edition number or a later air information date, then your chart is not current (see Fig. 4) and *should not be used.* In fact, the new edition may have been published because a newly acquired source revealed potentially hazardous information on the previous edition.

CAUTION

AIR INFORMATION CURRENT THROUGH
26 APRIL 1972

Consult Notices to Airmen (NOTAMs) and Flight Information Publications (FLIPs) for the latest air information; the Chart Updating Manual (CHUM) for other chart revision information.

Fig. 4

The Incomplete Chart. After all the work to research, compile, engrave, print, and distribute that long-awaited new edition (typically, this takes 1-2 years of highly skilled effort), the chart finally reaches your hands. One of the biggest mistakes you might ever make would be to use it as is. That chart is not ready for flight! Precisely because of this production time lag and because our world is being reshaped so fast, the chart is, to some degree, out of date. (This is why we cannot print such changeable things on the chart as frequencies or full coverage of special use airspace.) So the question is: How do I get my chart ready for flight? And the answer is found on every single chart you receive (see Fig. 4).

A CHUM Is More Than a Friend. One of the best friends a navigator or pilot can have is a CHUM, the DOD Chart Updating Manual. The CHUM is a monthly DMAAC publication designed to inform DOD users of potentially hazardous chart corrections. Your chart is incomplete without reference to it. You should also refer to FLIPs (particularly for airspace and airfield obstruction information) and NOTAMs (for the very latest, last minute corrections). But a word of warning is in order. CHUM, FLIPs, and NOTAMs inform the user of all *known* chart discrepancies and other information which could affect flight safety. As always, there is no substitute for heads-up flying. Assuming that uncharted obstructions are lurking in the wild blue is essential to maintain a fly-safe attitude.

Read That Legend . . . Every Time! Charts are constantly being improved (we think!), and because of the long time required to produce just one sheet, improvements throughout a chart series such as the ONC are perceived only gradually by the user. Contour intervals, symbols, and other rules of the game of chart interpretation change. The source of information for these continual changes is the chart legend itself. Every time you pick up a chart, thoroughly examine it before use. Remember that the chart legend is the only place where the cartographer can, and often does, tell the user of changes in the ground rules, changes that are designed to improve the chart and make it more effective.

The Critical Ingredient. Aeronautical charting at the Defense Mapping Agency Aerospace Center is a highly skilled profession manned by expert cartographers and air information specialists with years of experience in portraying and producing chart information. Many have significant prior experience as pilots, navigators, and air traffic controllers. This professional civilian core is augmented by navigators and pilots in the Requirements Division serving in joint air operations staff officer assignments. These officers act as a liaison between the user and the DMAAC production area to ensure that the current product satisfies the operational requirement. These efforts are justified only so long as you, the user, let us know of your successes or failures with our products. Your responsibility is to understand how to use the aeronautical chart and to let us know of suggestions, corrections, criticisms, and comments that might improve the product and result in a safer, more effective mission.

There are two easy ways for you, the operational user, to communicate your correction or suggestion to us. One way is to annotate your corrections directly on the chart and forward it to the DMA Aerospace Center address shown in the chart margin. We are interested in receiving corrections to our charts based on actual inflight use, which, in our opinion, is the best test and evaluation situation possible. In lieu of forwarding a chart, the user can fill out the DMAAC Form 8325/1, Correction/Suggestion Card, which is available in all Base Ops (see Fig. 5). This is particularly handy to use during preflight planning while the idea is still fresh in your mind. Lacking the gift of prophecy, we cannot correct an error unless we know of its existence. And that is where you come in. We need feedback from the user. That makes *you* the critical ingredient. Continued

CORRECTION/SUGGESTION CARD

DOD FLIGHT INFORMATION PUBLICATIONS (FLIP) AND USAF NAVIGATION AND PLANNING CHARTS

FLIP AREA OF THE WORLD			DATED
FLIP PRODUCT	CHART NUMBER OR PAGE NUMBER	PANEL OR PARAGRAPH	
NAV-PLANNING CHART IDENTIFICATION	SERIES AND NUMBER	EDITION NUMBER	DATED

CORRECTION OR SUGGESTION: Identify discrepancy, include coordinates if applicable, correct information and source, if known

DATE	NAME AND GRADE (Print)	ORGANIZATION AND ADDRESS (Print)

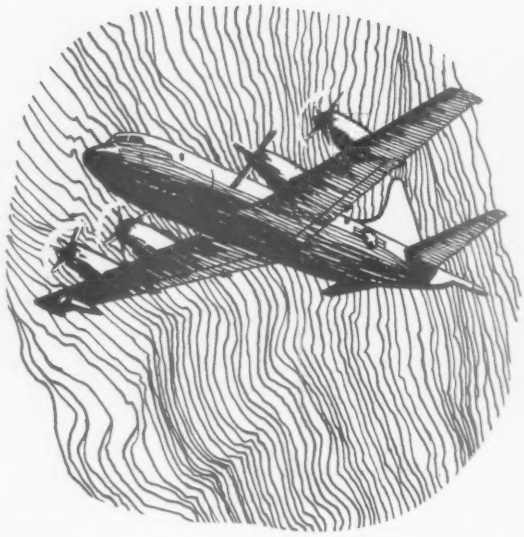
DMAAC FORM DEC 72 8325/1 For Resupply: Submit requests to DMAAC (PDR), South Annex, St Louis AFS, Mo 63125

REPLACES ACIC FORM 48, DEC 68, WHICH IS OBSOLETE

Fig. 5

22 **Summary.** Getting more out of your aeronautical chart boils down to understanding a few essential points:

- Aeronautical charts are characteristically not faithful representations of the real world, but are really schematic diagrams of selected features.
- Chart misrepresentations are due to the inflexible limitations of scale as well as certain cartographic considerations.
- The chart is potentially hazardous and incomplete without reference to CHUM, FLIPs, and NOTAMs. Reading the legend helps, too.
- Finally, a system does exist that allows direct input from the user into the quality of the charts he uses. This is perhaps the most important point because, as usual, the human equation is the key to making subservient systems – be they complex avionics, simple handtools, or charts – work effectively. ◄



Only some of us can learn from other people's mistakes. The rest of us have to be the other people.

Ace L.

Everybody Loves a Fat Man

IT'S SOMEWHAT ironic now to realize that the biological differentiation of adipose or fatty tissue was a triumph of evolution! The ability to store fat as true adipose tissue appeared first in the arthropods and became fully developed in birds, mammals, and sedentary marines (not the Corps).

The ability to store fat was likely an important factor in the liberation of life from the sea with its constant source of food. Nevertheless, the ability to store fat in compact form, although of great survival value when food was scarce, has become a handicap in affluent societies where overnutrition and underactivity have upset the ancient balance between caloric supply and demand.

The consequence is obesity of epidemic proportions with associated diabetes and diseases due to atherosclerosis (hardening of the arteries) such as heart disease and hypertension (high blood pressure).

Statistics reveal that the mortality among U.S. males who are 20 percent or more overweight is one-third to one-half times greater than males of an acceptable weight.

Estimates of the prevalence of obesity for the population as a whole indicate that one-half of U.S. males between ages 30 and 39 are at least 10 percent overweight and one-fourth are 20 percent overweight.

Ascribing obesity to overeating alone, however, is an oversimplification. *Normal* food intake with very *low* activity is characteristic of most obese children and adolescents in the United States, while *high* intake with *low* activity is characteristic of obese adults. There also appears to be a hereditary factor as evidenced by familial incidence of obesity. Physical causes include damage to the hypothalamus (the brain center controlling appetite), endocrine gland disorders (i.e., thyroid), and psychological stresses. These physical causes, however, are present in only about 5 percent of obese cases.

The basic cause of 95 percent of obesity problems in this country is, therefore, increased caloric intake with decreased caloric expenditure or the development of poor dietary habits coupled with too much of the sedentary "good life." The most serious consequence of incorrect nutritional habits is heart disease, the No. 1 cause of death by disease in the U.S.

Three years ago, the Department of Health, Education, and Welfare established a national commission to advise the government and private physicians on practical ways of reducing mortality from heart disease. The major areas of emphasis concerned nutrition and diet. The overwhelming recommendation called for lowering the total fat content of the typical American diet from the current level of about 40 percent of calories to between 30 and 35 percent (a very moderate decrease) and to decrease the daily cholesterol intake by over half – from 700 mg per day to less than 300 mg per day. A 10 to 15 percent lowering of the blood cholesterol levels might lower the incidence of coronary heart disease by as much as 30 percent, the commission indicated.

The commission recognized that nutrition does not account for all of the risk factors in heart disease. Heredity, cigarette smoking, diabetes, obesity, sedentary living, untreated hypertension, and possibly psychologic tensions are also implicated.

The urgency that many of us in the medical profession have felt for some time regarding the dietary aspects of prevention of heart disease has been strongly sanctioned by the commission's findings. It carries a clear message for all of us. It must be impressed upon society, in general, and all members of the family, in particular, that sound nutritional practices – especially in decreasing the amount of fats and cholesterol in the typical diet – are paramount to prevention of heart disease and the numerous related vascular diseases initiated and aggravated by high body fat and a high cholesterol count.

LCDR William J. Kapla, MC
MAG-26 Senior Flight Surgeon

BREAK A LEG!

WHAT'S an article on skiing doing in a naval aviation safety magazine? Well, in just one fiscal year, 25 Navy men and women were put out of action on the ski slope by major injuries – 14 broken legs, 5 broken ankles and one dislocation, 5 major knee injuries, and 1 dislocated thumb.

There was even one fatality – a man on an organized ski tour who had been drinking. Although he did not appear inebriated, he walked up the ski slope and either fell asleep or collapsed. He was found the next morning. Temperatures were sub-zero.

More and more Navy folk and their families take to the slopes each year.

The following first-person narrative of a common ski accident comes from a Navy chief, Rocky-

Mountain-raised and a lifelong skier. For the weekend he describes, he was the designated ski instructor. Our thanks to HMC Gladstone and Environmental and Preventive Medicine Unit-7's *The Mike Flag,* which originally printed Chief Gladstone's story.

"The night before leaving, I had checked all my equipment and loaded the car," he begins. "My safety bindings were in good operating order and ejected my boots with the slightest pressure of the hand. Skipping breakfast in my anxiety to get going, I kissed my wife goodbye, looked in on our sleeping children, and then literally ran to the car and sped towards the giant white slopes to do my thing.

"Since returning from 2 years in the tropics, I had skied only once. Now, the prospect of a 3-day weekend to tear up the mountain really turned me on.

"The trip from 'Bella Napoli' to the ski area took about 2½ hours. After changing into ski clothes, I waxed my skis, grabbed my poles, and just about ran to the nearest lift. Strapped on the boards . . . bought a ticket for the day . . . rode the lift to the top . . . adjusted the poles on my hands . . . and took off.

"Two runs on this particular slope loosened me up some, but that wasn't enough. There must be bigger and better slopes to conquer! I skied over to the gondola, unstrapped, and got into line.

"The light was flat, very flat. In spots where yesterday's sun had softened the snow, it would be icy. The first 200 to 300 yards were good. The old muscles were getting back in the groove. Then it happened – I hit a patch of ice . . . sat back . . . tried to recover my balance by throwing myself onto the front of the skis . . . . hit another icy spot . . . and went over the tips.

"I tucked my head under and thought that keeping the skis above my head would probably get me out of this. But with my momentum, this tactic was impossible. Slowly, the tip of my right ski entered the hard packed snow and lifted my body. At that moment, there were two sounds, much like pistol shots, so close together that they were almost one loud 'CRACK.' I hit the packed snow and lay still. The pain began – the tibia and fibula of my right leg were broken.

"During the interval before the ski patrol arrived and carted me down the hill, thoughts of things done before starting on this trek and simple tasks forgotten went through my mind. My mistakes angered me because they were so simple.

"No. 1: Before putting the skis on each time, forgetting to check my safety bindings to see if they would release.

"No. 2: Failing to wear goggles or glasses with amber lenses, or, for that matter, any type of eye protection at all.

"No. 3: Skipping breakfast. This, in my opinion, slowed down my mental processes.

"All in all, this experience taught me some valuable lessons the hard way – lessons which should be passed on to readers who ski or who are just learning to ski:

- Eat a well-balanced meal before participating in athletics, especially skiing. Keep yourself in top physical condition.
- Check your safety bindings *each* time you put them on. This will prevent their becoming too tight to release when needed or too loose causing them to release unexpectedly.
- Wear correct eye protection with proper lenses for existing snow and light conditions, and carry the proper extra lenses for changing light conditions.

"Follow these simple rules, ski safely and wisely, use all the proper equipment, and you won't end up like me – in a cast for the next 5 or 6 months."

The subject of safety bindings deserves a bit more discussion. The release tension you crank into the binding in your warm livingroom may change considerably in the cold of the slopes. It will change radically with snow packed into the binding and under the boot sole. *Check the release before each run.*

The beginning skier has all sorts of problems. He can't turn. He can't stop. All he can do is go. He probably won't own his equipment, so he must learn and understand the variety of equipment he rents. He must learn the multiplicity of signs and symbols which grade the degree of difficulty of slopes and warn of dangers.

A beginning skier is like a beginning driver turned loose alone. It's as easy to teach yourself to ski as it is to teach yourself to drive. For the beginning skier, lessons are an absolute necessity. In fact, for any skier, lessons are a good idea, particularly in an unfamiliar ski area or after a period of not skiing.

Ski accidents can happen any time, but they tend to cluster at two particular times. The first run of the day is dangerous. Muscles, joints and reflexes all take time to warm up. The first run should be an easy run. But far and away the most dangerous time is late in the day on the "last run."

You're saying, "Any run that ends in a broken leg is a last run." You know exactly what we mean – it's been a great day, you've skied hard, everything has been perfect, and you say to yourself, "I've just time and strength for one more."

Don't! The first time you wonder if you have the energy for "one more," stop! That's the "last run" which accounts for a remarkably high percentage of the fractures.

Nearly all ski injuries are preventable. And, while the prevention doesn't take the fun out of skiing, a severe fracture takes *all* the fun out of *everything.* ◄

A copilot's job is to monitor the flight as well as to assist up front. But often there are strings attached.

Copilot or Right-Seat Puppet

"The captain, during the final stages of approach, did not receive the required assistance from the copilot regarding the standard callouts." – excerpt from an accident report following an investigation into a civil air crash.

By MAJ John W. Ray, USAF
Supervising Editor *MAC Flyer*

THEY don't get their noses rubbed in it quite as much as navigators, but copilots often serve as the butt-end of jokes implying their presence in the cockpit is more requirement than necessity.

If you're a new copilot, you'll probably nod in agreement, while aircraft commanders may validate any tendency to do likewise by recalling their days in the right seat.

Jokes are designed to be taken lightly – and should be. But flying the right seat (or left seat in helicopters) is a serious business.

The pioneer aviator who puffed up indignantly at the mere suggestion of taking a second pilot along might

have had sound reasons for doing so. But as aircraft and airway systems became more complex, this Lone Eagle rationale became archaic for obvious reasons.

Unfortunately, the subtle copilot put-down hasn't altogether disappeared. Perhaps, it is simply a holdover from the old days. But there is a very real possibility that such put-downs, which sometimes seep into the cockpits of our most modern aircraft, have contributed to air crashes in which copilots played major roles.

We've all seen the ready young copilot, eager to assist his aircraft commander any way he can. Yet, how many times have you seen (or been) an impatient aircraft commander who completely takes over his copilot's duties in the interest of "saving time?" How many aircraft commanders are simply too impatient to wait for an inexperienced right seater to methodically grope through the checklist?

The cockpit put-down is directly related to the unrealistic attitude that a really proficient aircraft commander can perform all cockpit duties better without his copilot's assistance. This kind of thinking can have undesirable offspins, one of which is the copilot who won't touch anything without first hesitating and throwing a glance at the pilot to see if it's okay. In essence, such a copilot tends to transfer his responsibilities to the pilot. He subconsciously gives up trying to perform to his own standards because his aircraft commander discourages him from doing so. Ever try to fly a two-pilot aircraft all by yourself? That's about what happens when your copilot subconsciously sits back and waits for you either to perform his duties or verbally instruct him how to do something in which he should already be proficient.

Then, there's another type of copilot, suffering from a strain of the same malady, who feels that the pilot is watching him constantly. Since he knows he's being carefully scrutinized, this copilot expects all of his mistakes to be immediately corrected from the left seat, so he isn't quite as careful as he might be. Unfortunately, all copilot errors aren't correctable. For instance, what could happen if a gun-shy copilot hesitates to perform a critical duty during an emergency?

Copilots are vital crewmembers. They're not just sitting in the right seat waiting to upgrade. But if they aren't consciously aware of this, they may not perform effectively. And if they don't perform effectively, then a crew is someday going to find itself with serious problems.

Most inexperienced copilots start out trying their level best to please the man on their left. There is nothing wrong with this. The copilot should try to please his boss. But what is more important, he must think for himself. He should serve as a thinking entity,

not simply as a right-seat puppet. If he doesn't think, then he is robbing the entire crew of a great part of the pilot brain power aboard.

Any good aircraft commander monitors his copilot to some extent, particularly if the copilot is new to the system or inexperienced in the aircraft. He monitors all of the crew. But, copilots need the opportunity to assume responsibility, too, and gain confidence in their ability to serve as the pilot's right-hand man. To do this, the right seater must believe that he is an important part of the crew. It is in this development that the aircraft commander plays a major role.

Aircraft commanders don't have a corner on the accident market, and certainly, copilots must perform their duties properly to make each flight safe. After all, copilots alone have precipitated air crashes – ample proof of the critical nature of many of their duties.

Not long ago, the pilot of a civilian jet transport, using his own unauthorized technique, called for his copilot to arm the ground spoilers during a landing roundout. But instead of lifting the spoiler actuating lever, the copilot pulled it aft to the extend position, and the spoilers deployed. The pilot noticed the error immediately, but it was one of those uncorrectable mistakes. The aircraft settled down onto the runway and crashed during a go-around attempt. There were no survivors. An error by the pilot? Of course. A copilot error? Yes. The pilot erred in using an unauthorized technique. The copilot not only erred in the manner in which he manipulated the spoiler lever, he also played the role of puppet in performing this unauthorized maneuver. No one will ever know just how many times he had played this identical role without such tragic results.

How many copilots, rather than develop their own proficiency and knowledge, unwittingly play the puppet and accept questionable maneuvers or procedures from the man on their left?

Another example of the importance of right-seat thinking was vividly pointed out during a jet transport takeoff. The copilot, instead of activating the gear up lever, activated the spoiler switch. The crash killed 62 persons. There can be little doubt that the copilot wasn't taking his routine duties as seriously as he should.

If you, as a copilot, question the importance of your aeronautical role, then you haven't really stopped to analyze some of your duties. For example, there are few controls on an aircraft more critical than the spoilers. Yet, who often manipulates the spoilers near the ground? That's right, the copilot – that many take so lightly. When a put-down copilot, feeling so nonmission essential, touches a spoiler control, it is somewhat like a workman sitting down to rest near a dynamite plunger.

In spite of their good intentions, some aircraft commanders often become impatient with inexperienced copilots. Nevertheless, they rely on copilots to perform well, particularly when the heat's on. They look to the copilot to monitor what goes on in the left seat and sing out when something doesn't look right. A right-seat dummy is even less effective than a right-seat puppet.

One company became so concerned about this very problem that it ran a simulator study to check copilot effectiveness. Prior to each simulator flight, the captains were told to disregard certain flight instruments and fly without them. The copilots weren't told this. In more than 20 percent of the flights, the simulator crashed. The copilots either failed to detect that anything was wrong, or hesitated to inform their pilot that his flying was getting dangerous.

Many air crashes could have been prevented simply by an alert copilot speaking up. So, if you are a copilot, never sell your job short. In spite of their short fuses, gruff voices, and obnoxious copilot jokes, aircraft commanders depend on you, and they're the first to admit it. They are not alone. Schedulers, flight commanders, operations officers, and squadron commanders on frequent occasions depend upon the experienced copilot to aid the new upgrade over the initial hurdles of aircraft command.

When a copilot upgrades to aircraft commander, the left seat will become the most important position in the aircraft. But while you're a copilot, the most important position is the right seat because a copilot's job performance can mean the difference between life and death. And there's no one anywhere who can put down that one fact about a copilot.

A Word to the Wise

RECENT tests by the Canadian Department of Communications have established that handheld electronic calculators cause a degree of interference in ADF signals when the calculator is operated in close proximity to the ADF antennas. It is not necessary that operations be performed on the calculator, only that the calculator be turned ON.

Pilots should be aware of this and use ADF indications cautiously when handheld electronic calculators are being used in the cockpit.

Repeatable Mishap

SIMILAR mishaps occur at irregular intervals, and it's just about time for another one to occur to a VERTREP pilot.

Let's set the stage from an incident which took place 3 years ago.

A VERTREP crew in their CH-46D were engaged in night operations, transferring bombs from an AOE to a CVA. The copilot, at the controls, was in a hover while his load was being lowered to the No. 4 elevator.

One crewman's ICS cord pulled out, and he became distracted and failed to release the load at the proper time. The copilot was aware that the load was on deck and assumed it had been released. He began moving, outboard of the elevator, and dragged the load over the side. He felt the weight of the load, raised collective, and caught the load on the underside of the deck edge safety net.

The cable on the bomb pallet parted, and the stretched pendant snapped the harness into the belly of the aircraft causing fuselage skin damage. The load of bombs was consigned to Davey Jones' locker.

The copilot didn't have his radio selector switch off, as required, and was listening to transmissions from the CVA. He thought that "hook clear" from the crewman had been blocked by the CVA traffic. The other crewman was diverted by the hookman's ICS problem and wasn't watching the load either.

The incident can be attributed to disregard of the cardinal rule in VERTREP operations – "when in doubt, hold." The copilot, unsure of the load status, should not have maneuvered from his hover until ICS had been reestablished.

The HAC abrogated his responsibility to be aware of the status of the load and his copilot's actions. He also failed to ensure the copilot's UHF switch OFF.

Personnel aboard ships receiving VERTREP loads are cautioned again not to transmit to the helicopter when it's over the deck, except in an emergency.

Was this a one-time mishap? No. And similar circumstances will arise, and some other pilot will lose his load, inflict injury to personnel, or damage his helicopter by maneuvering before he receives "hook clear" from his crewman. ◄

Most people who quit smoking give up cigarettes in two stages; first theirs, then yours.
Ace L.

Letters

Add Lessons Learned

NAS Pensacola – The lessons learned in LT Finger's article "Fearsome Flyoff," in the AUG '74 APPROACH, need much greater amplification for the Fleet.

The following quotes from OPNAVINST 3710.7G (General NATOPS), para 704, should have been mentioned, if only as an editor's note:

(1) 704 b. (2) "If loss of pressurization occurs, immediate descent shall be made to a flight level where cabin altitude can be maintained at or below FL250, and oxygen shall be utilized by all occupants."

(2) 704 b. (3) "When an occupant of any aircraft is observed or suspected to be suffering from the effects of decompression sickness, the pilot will immediately descend, land at the nearest installation, and obtain qualified medical assistance."

While stationed at Whidbey Island, I observed that this pressurization problem was more than a singular occurrence in the A-6. To combat this problem, A-6 pilots and B/Ns were given frequent AOM lectures on the aeromedical hazards of cabin pressurization loss (rapid or otherwise) and resultant susceptibility to decompression sickness.

To the aviation community: When was the last time you reviewed the General NATOPS, Chapter 7, and asked your flight surgeon/physiologist as to the reasons why it is so stated?

LCDR Hal Pheeny, MSC, USN
Aviation Physiology Unit
Naval Aerospace Medical Institute

We Get Letters . . .

Langley AFB, VA – For some time now, we have been excerpting articles and parts of articles from your publications to use in our own flying safety *Newsletter*. Being more professional, educational, and often entertaining, the articles have brightened and broadened our own small efforts.

The purpose of this letter is to express our appreciation for your work and to provide some small indication of the various ways your information is being received and transmitted (copy of our *Newsletter* attached). Hopefully, your authors and editors receive the credit they richly deserve.

Please continue producing such expert and interesting information. It surely benefits other safety staffs and operators no less than it does us.

MAJ Richard B. Carter, USAF
Chief, Safety Division
HQ 4500th Air Base Wing (TAC)

Safety Goggles

FPO, New York – As a qualified plane captain in an SH-3H squadron, I have experienced considerable difficulty seeing pilot signals on sunny days while using the dark lens included in the safety goggles (FSN 8465-161-4068). The problem is particularly prevalent when the sun strikes the aircraft's windows. This is a particularly dangerous situation if an emergency arises and the pilot attempts to give me an emergency signal. It also prevents me from knowing if he has received my signals.

I have had no difficulty when using polarized sunglasses. I suggest that either the dark lens be polarized or the goggles be designed to enable the user to wear polarized sunglasses underneath them.

AN Niel A. Formisano
HS-7

• Your points are well taken. The Safety Center has passed a copy of your letter on to NAVAIRSYSCOM for appropriate action.

The Real Record

USCG Training Center, Governors Island, NY – Re "Record of Sorts," APPROACH SEP '74. The HC-2 helo team unquestionably did a magnificent job, but came nowhere near the record.

Our files of SAR case studies contain a report from San Juan Rescue Coordination Center which controlled an operation involving a DC-9 which ditched 33 miles from St. Croix Island, V.I. The aircraft ditched at 1610 Q on 2 MAY 1970. The report states: "1727 Q Navy H-3, Saltspray 15, arrived on scene and commenced hoist operations. 1744 Q Saltspray 15 departed for St. Croix with *26* survivors."

San Juan SAR coordinator's comments: "The performance of the USN H-3 helicopter from Fleet Composite Squadron EIGHT at Roosevelt Roads is a credit both to its crew and to the manufacturer. The prodigious feat of successfully hoisting 26 persons from turbulent seas and safely transporting them to St. Croix in one sortie clearly demonstrates its eminent suitability for major search and rescue missions."

Another interesting but "nonrecord" case involved a CGAS DETROIT HH-52A which evacuated 13 survivors from a sinking boat in the Great Lakes. By the time number 13 was aboard, the

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aircraft was well over max gross, so the pilot elected to air taxi to the beach, where the helo landed safely.

CDR C. F. Meredith, USCG
OinC, National SAR School

To Set the Record Straight

NATC Patuxent River, MD – The APR '74 APPROACH depicted LAU-10 Zuni rocket launchers loaded aboard MERs on a "trection" of F-4s. In a letter to the Editor, I took exception to the illustration pointing out that the LAU-10 is not an authorized load aboard a MER. APPROACH replied as follows in the JUN '74 issue:

"The LAU-10 Zuni rocket launcher *is* an authorized load on the MER on stations 1, 5, and 9 in the 'shifted aft configuration' (reference F-4B/J TACMAN, NAVAIR 01-245FDB-1T, Fig. A1-5). Unfortunately, the artist's rendition shows the LAU-10 Zuni rocket launcher loaded forward. To this extent, it is in error."

Aside from referencing an out-of-date TACMAN (the current F-4B/J/N TACMAN is dated 1 September 1972 in which there is no Fig. A1-5), the interpretation of the out-of-date TACMAN was incorrect. The LAU-10 *was* authorized with the MER shift aft, not the rocket launcher itself. More to the point, however, on Figs. A-12/A-13 of the current F-4B/J/N TACMAN, the LAU-10 has been deleted as an authorized load aboard the MER.

LT H. D. Wolcott
Weapons System Test Division
Ordnance Branch

● **We concede. You're right.**

Wants Increase in Subscription

Columbus AFB, MS – I would like to pass on some favorable comments about your magazine from our personnel at Columbus. We presently have a base population of around 3600 with 350 instructor pilots and around 300 student pilots who enjoy your publication a great deal. The only problem is most of our people have to wait a while to get a glance at the magazine.

We understand the paper shortage has hurt everyone, but if you could see your way clear to increase our subscription, I know everyone would be grateful. Thank you for such a meaningful and useful publication.

LTCOL Robert J. Patty, USAF
Chief, Wing Safety Division
HQ 14th Flying Training Wing (ATC)

● **Your subscription has been increased, effective with the December issue.**

Right the Record

FPO, San Francisco – Your answer (in the SEP '74 APPROACH) to the letter signed *A Proud HC Pilot*, concerning CDR Kruger's article, "One Year and Trucking," is even more condescending than the article itself. There's no denying that HC dets aboard carriers *USED TO BE* treated as a necessary evil by the ship and air wing.

At HC-1, our SH-3 detachments have been going aboard attack carriers as integral members of the Air Group for several years. The detachments are, in effect, mini-squadrons, owning their four aircraft and being composed of 12 pilots and 75 enlisted men. The pilots are assigned by the squadron; the enlisted men are sent directly to the det by BUPERS.

The det OinC reports to CAG and is fully accepted on an equal footing with squadron COs. The success of this has been proven by the results of numerous OREs where the helo detachments are graded as a part of the air wing. Frequently, the dets are evaluated as one of the top units aboard.

Their high standards of performance are also reflected by many ex-OinCs who have screened for command, some, a year or two early. I'd venture to say that old CVA rumors concerning helicopter pilots were in the process of being dispelled long before HS-5 embarked on its "highly successful cruise."

APPROACH would do well to check the facts on rescues. One thousand, indeed! Helicopter Composite Squadron ONE alone has 1499 documented rescues. Counting rescues made by other HC squadrons, the total number must be at least 4000 – maybe much higher.

We HC pilots don't want to take anything away from the pilots of HS squadrons. We just want credit given where it's due.

LCDR Roland F. Habicht
HC-1, Detachment 3

● **Our "guesstimate" was way off, wasn't it? A phone call to HC-2 revealed 2319 rescues, 885 of which have been at-sea pickups.**

On second thought, it only stands to reason that in 25 years of helo SAR, there's been one helluva lot of rescues.

NUMEROUS READERS CAUGHT US!

For the second consecutive year APPROACH has published a November '73 issue. Just a harmless example of what complacency, inattention to detail, and old-fashioned carelessness will do. Those words sound familiar? They should. You've seen them countless times before in countless issues of APPROACH. They're "primary causes" – each one of them.

We didn't bang up any 14 million dollar birds or kill anyone, but we did end up with egg on our face.

Unless you check *every* detail *every* time, sooner or later you're gonna really be embarrassed – or worse. – Ed.

Safety Signery

The following limerick is posted on a ladder in the hangar spaces of VS-24:

There once was a man making haste,
Up the stairs with no time to waste.
The handrail was there,
But he failed to care,
And now in a cast he is placed.

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approach

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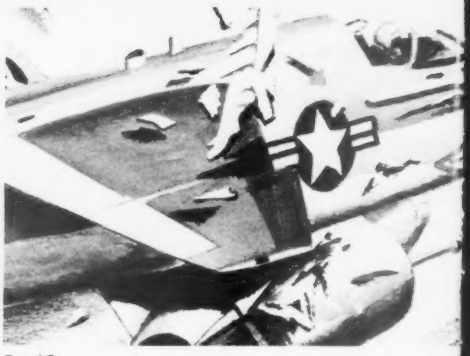

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RADM R. E. Rumble
Commander, Naval Safety Center
CAPT F. T. Rooney
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Blake Rader, Illustrator
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CREDITS/R. G. Smith's cover depicts a NAVTRACOM Douglas TA-4 *Skyhawk* crossing the ramp for an arrested landing. Courtesy McDonnell Douglas Aircraft Corporation.

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CAPT Jack Schauf of United Air Lines in UAL's *The Cockpit*, wrote about . . .

A CONSTANT AWARENESS

HE commented on the difficult time a juggler had keeping six plates moving through the air without a mishap – while on skates.

He observed that the juggler couldn't keep all plates in sight at one time, but was able to perform by developing a sort of omniscience (a continuing awareness of the plates and any change in their pattern).

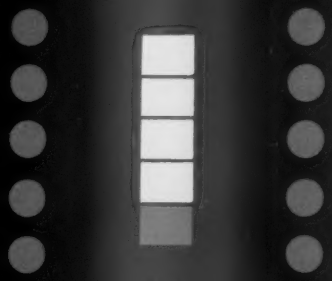
He said, "People who fly airplanes have a problem similar to the juggler's . . . It takes experience to develop the capacity and practice to maintain it . . . A pilot who discovers that he's unable to maintain a wide awareness, responding to multiple inputs, competently juggling and balancing all the factors required to fly *(safely – Ed.)* . . . owes it to himself to stay on the ground . . . "

No truer words were ever written. For example, two helicopter pilots, dressed in their nomex finest, were shooting a night approach to a nonaviation ship. It was a typical night at sea – no horizon, haze which ringed every visible light, and some turbulence.

The copilot noticed his radar altimeter at 200 feet and looked down at the ocean. His eyes told him those waves and spray were a lot closer than 200 feet. He advised the pilot.

The pilot switched his scan from the gages to the outside and initiated an immediate pullup. Both indicators were identical, stuck at 200 feet. The pilot guessed he had descended to 50 feet when he pulled up. Further, he was put in a bind when his eyes played tricks on him and made him appear level with the ship's superstructure.

To complete the story, it is necessary to note that the radar altimeter did operate normally, *later*, but was kaput when needed most. It was replaced. ◄



the Little Machine that Forecasts the Future

contributed by LT S. J. Gant, USN, VA-95